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10/621,129	07/16/2003	Yuriy Gmirya	67,008-070;S-5668	1958
26096 7590 12/17/2007 CARLSON, GASKEY & OLDS, P.C. 400 WEST MAPLE ROAD SUITE 350 BIRMINGHAM, MI 48009			EXAMINER LE, DAVID D	
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Please find below and/or attached an Office communication concerning this application or proceeding.

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**BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES**

Application Number: 10/621,129
Filing Date: July 16, 2003
Appellant(s): GMIRYA, YURIY

MAILED

DEC 17 2007

GROUP 3600

David L. Wisz
For Appellant

EXAMINER'S ANSWER

This is in response to the appeal brief filed on 18 September 2007 appealing from the Office action mailed on 06 February 2007.

(1) Real Party in Interest

A statement identifying by name the real party in interest is contained in the brief.

(2) Related Appeals and Interferences

The examiner is not aware of any related appeals, interferences, or judicial proceedings which will directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal.

(3) Status of Claims

The statement of the status of claims contained in the brief is correct.

(4) Status of Amendments After Final

The appellant's statement of the status of amendments after final rejection contained in the brief is correct.

(5) Summary of Claimed Subject Matter

The summary of claimed subject matter contained in the brief is correct.

(6) Grounds of Rejection to be Reviewed on Appeal

The appellant's statement of the grounds of rejection to be reviewed on appeal is substantially correct. The changes are as follows:

Claims 1, 3, 4, 12, 16-24, 38, 41, 42 and 44 were rejected under 35 U.S.C. §102(b) as being anticipated by *White* (4489625).

Claims 5-11, 13-15, 26, 27, 39, 40, 43 and 45 were rejected under 35 U.S.C. §103(a) as being unpatentable over *White* in view of *Kish* (5813292).

The brief does not address/include the 35 U.S.C. 112, second paragraph, rejection of claims 41-45 as set forth in the final Office action, dated 06 February 2007.

(7) Claims Appendix

A substantially correct copy of appealed claim 38 appears on page 17 of the Appendix to the appellant's brief. The minor errors are as follows:

Line 1 of claim 38, "A method The split torque gearbox as recited in claim 1" should be -
-The split torque gearbox as recited in claim 1--. See page 10 of the claim set, submitted on 11/17/2006.

(8) Evidence Relied Upon

4,489,625	White	12-1984
5,813,292	Kish et al.	09-1998

(9) Grounds of Rejection

The following ground(s) of rejection are applicable to the appealed claims:

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 41-45 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claims 41 and 45 recite the limitation “a first spur gear periphery of said first spur gear and a second spur gear periphery of said second spur gear at least partially overlaps an output gear periphery of said output gear adjacent a first side of said output gear, and a face gear periphery of said face gear at least partially overlaps said output gear periphery adjacent a second side of said output gear”. Since the output gear generally includes a top side, a bottom side and a circumferential side, it is unclear what the claimed limitation is referring to by “at least partially overlaps an output gear periphery of said output gear adjacent a first side of said output gear, and a face gear periphery of said face gear at least partially overlaps said output gear periphery adjacent a second side of said output gear”.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

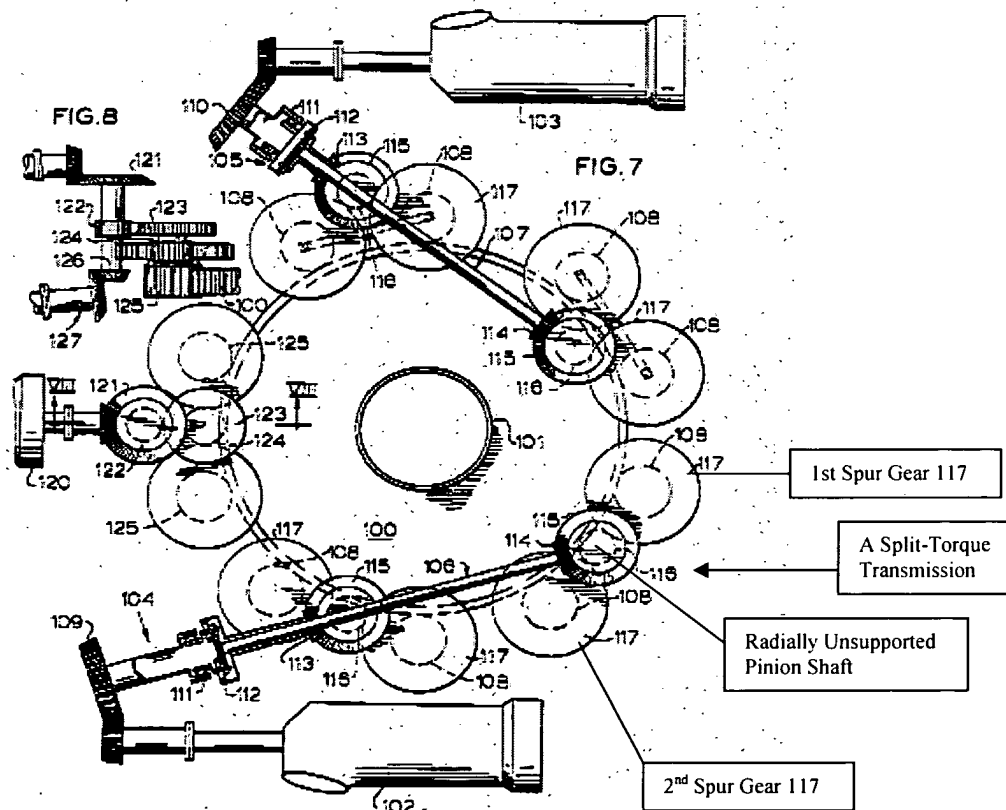
(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1, 3, 4, 12, 16-24, 38, 41, 42 and 44 are rejected under 35 U.S.C. 102(b) as being anticipated by U. S. Patent No. 4,489,625 to White.

White (i.e., Figs. 7-8; column 4, line 8 – column 12, line 12) discloses a split-torque transmission comprising:

With respect to claims 1 and 12:

A split-torque transmission (i.e., Fig. 7, element A Split-Torque Transmission, below) comprising:



- A first spur gear (i.e., Fig. 7, element 1st Spur Gear 117 above, and column 5, lines 15-18) mounted for rotation about a first spur gear axis of rotation (see Fig. 7);
- A second spur gear (i.e., Fig. 7, element 2nd Spur Gear 117 above, and column 5, lines 15-18) mounted for rotation about a second spur gear axis of rotation (see Fig. 7);
- A floating pinion gear (i.e., Fig. 7, element 116; column 11, lines 30-37) driven by a radially unsupported pinion shaft (i.e., Fig. 7, being the Radially Unsupported Pinion Shaft, as shown in Fig. 7 above, that supports the floating pinion gear 116 and the face gear 115; viewing from the top of the Radially Unsupported Pinion Shaft, the bevel/face gear 115, which is supported by the Radially Unsupported Pinion Shaft, meshes with bevel/face gear 114, which is supported by shaft 106; the floating pinion gear 116, which is supported by the Radially Unsupported Pinion Shaft at the bottom end thereof, wherein the floating pinion gear 116, shown as the hatched marks, meshes with the first and second spur gears 117, shown as the solid line; since there is no other element that is shown to be mounted to or supported by the Radially Unsupported Pinion Shaft between the bevel/face gear 115 and the floating pinion gear 116, it is concluded that the Radially Unsupported Pinion Shaft is radially unsupported; an example of the radially unsupported pinion shaft is shown in Fig. 5, wherein the radially unsupported shaft that supports pinion gear 54 and face gear 53);

- Wherein the floating pinion gear (116) is mounted for rotation about a floating pinion axis of rotation which provides a resilient characteristic (i.e., Fig. 7; column 11, lines 26-37);
- Wherein the floating pinion gear (116) is meshed with the first spur gear (Fig. 7, element 1st Spur Gear 117, above) and the second spur gear (Fig. 7, element 2nd Spur Gear 117, above)
- Wherein the floating pinion gear axis of rotation is displaceable to split a load between the first spur gear and the second spur gear (i.e., Fig. 7; column 11, lines 26-37);
- Wherein the floating pinion axis of rotation, the first spur gear axis of rotation and the second spur gear axis of rotation are located along a common line (i.e., Fig. 7 and column 11, lines 30-31, states “the axis of the drive pinion 116 is collinear with the axes of the two dual drive gears 117”); and the radially unsupported pinion shaft is driven through a gear mesh (i.e., Fig. 7, being the gear mesh between gear 114 and gear 115) generally transverse to the floating pinion axis of rotation such that the radially unsupported pinion shaft is displaceable off the common line to split the load between the first spur gear and the second spur gear (i.e., Fig. 7; column 11, lines 23-37, states, “allowing the drive pinion 116 to float freely between the two driven gears 117, its driving position set by the balance of two diametrically opposed mesh force”).

With respect to claims 3 and 16:

- A face gear (i.e., Fig. 7, element 115) mounted to the pinion shaft (Fig. 7, being the Radially Unsupported Pinion Shaft, above) to define the gear mesh (i.e., Fig. 7, being the gear mesh between face gear 115 and face gear 114) generally transverse to the floating pinion axis of rotation (i.e., Fig. 7).

With respect to claim 4:

- Wherein the gear mesh (being the gear mesh between face gear 115 and face gear 114) includes a spiral bevel gear teeth arrangement (i.e., column 11, lines 14-26).

With respect to claims 17-24, 38, 41, 42 and 44:

- A main rotor shaft (i.e., Fig. 7, element 101);
- An output gear (i.e., Fig. 7, element 100);
- A first engine (i.e., Fig. 7, element 102);
- A second engine (i.e., Fig. 7, element 103);
- An input shaft (i.e., Fig. 7, element 106) driven by one of the first and second engines;
- a first spur gear periphery of the first spur gear (1st Spur Gear 117) and a second spur gear periphery of the second spur gear (2nd Spur Gear 117) at least partially overlap an output gear periphery of the output gear (100) adjacent a first/top side of the output gear, and a face gear periphery of the face gear (115) at least

overlaps the output gear (100) adjacent a second/bottom side of the output gear (100) (an example of this gear arrangement is structurally shown in Fig. 5);

- Wherein the face gear (115) driven by the input shaft (106) about a face gear axis of rotation (see Fig. 7);
- A first drive gear (i.e., Fig. 7, element 108) driven by the first spur gear;
- A second drive gear (i.e., Fig. 7, element 108) driven by the second spur gear;
- Wherein the floating pinion gear (116) is meshed with the first spur gear and the second spur gear (i.e., Fig. 7);
- Wherein the floating pinion axis of rotation, the first spur gear axis of rotation, and the second spur gear axis of rotation are located along a common line (i.e., column 11, lines 26-32);
- Wherein the floating pinion axis of rotation is displaceable off the common line to split a load between the first spur gear and the second spur gear (i.e., column 11, lines 32-37);
- Wherein the radially unsupported pinion shaft is driven through a gear mesh (i.e., Fig. 7, being the meshing of the spiral bevel gear teeth arrangement of gear elements 114 and 115) generally transverse to the floating pinion axis of rotation (i.e., Fig. 7);
- Wherein the floating pinion gear is mounted to the radially unsupported pinion shaft in a cantilever manner (i.e., Fig. 7);
- Wherein the floating pinion gear is mounted to a distal end of the radially unsupported pinion shaft (i.e., Fig. 7);

- Wherein a displacement envelope within which the floating pinion gear axis of rotation may be displaced is non-linear (i.e., column 11, lines 26-37);
- Wherein a displacement envelope within which the floating pinion gear axis of rotation may be displaced is inherently transverse to the floating pinion gear axis of rotation;
- Wherein a displacement envelope, within which the floating pinion gear axis of rotation may be displaced to split the load between the first spur gear and the second spur gear, generally includes diamond shape; and
- Wherein the floating pinion axis of rotation, the first spur gear axis of rotation, and the second spur gear axis of rotation are generally parallel (i.e. Fig. 7 and column 11, lines 26-37).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 5-11, 13-15, 26, 27, 39, 40, 43 and 45 are rejected under 35 U.S.C. 103(a) as being unpatentable over White in view of U. S. Patent No. 5,813,292 to Kish et al.

White discloses the limitations as set forth above. Regarding claims 5-11, 13-15, 26, 27, 39, 40, 43 and 45, White lacks:

- A first double helical gear driven by the first spur gear;
- A second double helical gear driven by the second spur gear; and
- Wherein the first double helical gear is of a smaller diameter than the first spur gear and the second double helical gear is of a smaller diameter than the second spur gear.

Kish (i.e., Figs. 1-2 and 6; column 1, line 50 – column 13, line 62), on the other hand, teaches a split path transmission system comprising:

- A first double helical gear (i.e., Fig. 1, element 118L Fwd or 118R Fwd) driven by the first spur gear;
- A second double helical gear (i.e., Fig. 1, element 118L Fwd or 118R Fwd) driven by the second spur gear; and
- Wherein the first double helical gear is of a smaller diameter than the first spur gear and the second double helical gear is of a smaller diameter than the second spur gear (i.e., Fig. 1).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify White such that the first and second drive gears are double helical gears and the diameter of the first and second double helical gears are smaller than the first and second spur gears, in view of Kish, in order to provide an effective equal torque splitting transmission.

(10) Response to Argument

Applicant argues that Figs. 7 and 8 of White reference do not disclose or suggest a radially unsupported pinion shaft driving a floating pinion gear and displaceable off a common line to split load between first and second spur gears. Examiner respectfully disagrees for the following reasons:

First, as explained above and shown in Fig. 7, the Radially Unsupported Pinion Shaft (as shown in Fig. 7 above) supports only a face gear 115 at one end and a floating pinion gear 116 at the other end, and since there is no other element that are shown to be attached to the Radially Unsupported Pinion Shaft between the face gear 115 and the floating pinion gear 116, it is concluded that the Radially Unsupported Pinion Shaft is indeed radially unsupported.

Second, column 11, lines 34-35 disclose the drive pinion 116 being allowed to float freely between the two driven gears 117.

Third, column 11, lines 30-37 disclose the axis of the drive pinion gear 116 is collinear with the axes of the two dual driven gears 117. In other words, the drive pinion gear 116 and the two dual drive gears 117 are located along a common line.

Fourth, column 11, lines 30-37 disclose an equal load-sharing occurs by allowing the drive pinion 116 to float freely between the two driven gears 117 when the axis of the drive pinion 116 is collinear with the axes of the two dual driven gears 117. In other words, a floating pinion gear 116 is displaceable off a common line to split load between first and second spur gears 117.

Accordingly, as set forth above, White reference does disclose a radially unsupported pinion shaft that is driving a floating pinion gear and displaceable off a common line to split load between first and second spur gears.

Applicant further argues that "White fails to disclose or suggest at least the subject matter of a radially unsupported pinion shaft, said floating pinion gear mounted for rotation about a floating pinion axis of rotation which provides a resilient characteristic." Examiner respectfully disagrees for the Radially Unsupported Pinion Shaft, as shown in Fig. 7 of White reference, does inherently have some degree of natural resilient characteristic. Accordingly, as set forth above, White reference meets the claimed limitations.

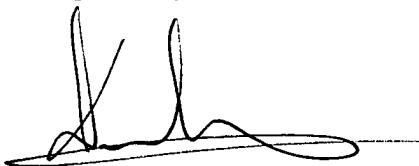
Applicant also argues "there is absolutely no motivation to modify White in view of Kish as proposed. It is axiomatic that an obviousness rejection must come from the suggestions or teachings of the references themselves." Examiner respectfully disagrees because KSR forecloses the argument that a specific teaching, suggestion, or motivation is required to support a finding of obviousness. See the recent Board decision *Ex parte Smith*, --USPQ2d--, slip op. at 20, (Bd. Pat. App. & Interf. June 25, 2007) (citing KSR, 82 USPQ2d at 1396) (available at <http://www.uspto.gov/web/offices/dcom/bpai/prec/fd071925.pdf>).

(11) Related Proceeding(s) Appendix

No decision rendered by a court or the Board is identified by the examiner in the Related Appeals and Interferences section of this examiner's answer.

For the above reasons, it is believed that the rejections should be sustained.

Respectfully submitted,

A handwritten signature in black ink, appearing to be 'David D. Le', written over a horizontal line.

David D. Le
Primary Patent Examiner
AU 3681
06 December 2007

Conferees:

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